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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/759,334	01/16/2001	Koichi Fujimori	3693-12	2551

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NIXON & VANDERHYE, PC
1100 N GLEBE ROAD
8TH FLOOR
ARLINGTON, VA 22201-4714

EXAMINER
AKKAPEDDI, PRASAD R

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/759,334	FUJIMORI ET AL.	
	Examiner	Art Unit	
	Prasad R Akkapeddi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☒ Claim(s) *3 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Supplemental Amendment, filed 04/17/2003, with respect to the rejection(s)of claim(s) 1-14 under have been fully considered and are persuasive due to the submission of the certified English translation of the priority document JP-2000-362208. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Jones et al. (Jones) (U.S.Patent No. 5,963,284).

Claim Rejections - 35 USC § 103

2. Claims 1-2, 4-5 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. (Jones) (U.S.Patent No. 5,963,284) in view of den Boer et al. (den Boer) (U.S.Patent No. 5,641,974).

As to claims 1, 15 and 19: Jones discloses a transflective liquid crystal display device comprising a first substrate (3), a second substrate (17), a liquid crystal layer (11) disposed between the first substrate and the second substrate; and a plurality of pixel regions (7) for display, wherein each of the plurality of pixel regions includes a transmission region for display in a transmission mode using light entering through the first substrate and a reflection region for display in a reflection mode using light (Fig. 4) entering through the second substrate (17, viewer's side), the first substrate includes, a transparent electrode region (7) defining the transmission region and a reflection electrode region

defining the reflection region (transflective polarizer), each surface facing the liquid crystal layer of the transparent electrode region and the reflection electrode region of the first substrate being flat, and the second substrate (17) includes a light diffusion layer (61) in the reflection region and includes, on a surface thereof facing the liquid crystal layer (11), a transparent electrode in the reflection region and the transmission region, the surface thereof facing the liquid crystal layer being flat in the transmission region and the reflection region. Jones also discloses a color filter (65) on the second substrate (17) and the light diffusion layer is located between the second substrate (17) and the liquid crystal layer (11). The light used in reflection (from the viewer's side), upon reflection from the transflective polarizer, passes through the light diffusion layer twice and the (back) light used in transmission passes through the light diffusion layer once (fig. 6).

Although Jones discloses pixel electrodes for the liquid crystal display, Jones does not go into specific structure of the liquid crystal display in detail. However, Jones defers to den Boer for the specific details of the structure (col.9, lines 27-39). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the structure as disclosed by den Boer into the structure of Jones, because Jones explicitly calls for such an incorporation (col. 9, lines 27-39).

As to claims 2, 4-5, 8-9: Jones discloses that the second substrate (17) includes the light diffusion layer (61) in the transmission region facing the liquid

crystal layer (11) and the light diffusion layer is formed on a surface of the transparent substrate (17) closer to an observer, a polarizing plate provided (19) on a surface of the second substrate closer to an observer. Jones also discloses that the light diffusion layer contains a matrix material (53) and particles (51) having a refractive index different from that of the matrix material (col. 6, lines 21-22), the second substrate includes a transparent substrate and a color filter layer (65), and the color filter layer functions also as the light diffusion layer (col. 7, lines 26-29). Jones discloses a front common transparent electrode (15) and an alignment layer (13). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the specific structure to provide for a display with reduced image parallax or pixel cross talk, to minimize depolarizing effects (col. 2, lines 36-38).

3. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones and den Boer as applied to claims 1 and 5 above and further in view of Okumura (U.S.Patent No. 6,008,871).

a. As to claims 6-7: Jones does not disclose the specific placement of the diffuser, except that it is located on the second substrate. Okumura on the other hand, in disclosing a similar transflective liquid crystal display device, disclose (Col.6, lines 56-65) that the diffuser (light scatter plate 107) is an adhesive layer and it can be located at different locations within the display device. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the light diffuser placements disclosed by Okumura

to the display device disclosed by Jones to enhance the brightness of the display.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones.

b. Jones discloses that the host material with the particles can be spin coated onto a substrate (Col. 6, lines 58-59). However, Jones discloses that the substrate is made out of glass and does not explicitly disclose that the substrate could be made out of plastic material. However, the use of plastic substrates for liquid crystal display devices is known and is common (see for example U.S.Patent No. 6,359,668). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the plastic substrate to the display device disclosed by Jones to make these devices lightweight.

5. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones and den Boer as applied to claim 1 above and further in view of Okumura.

Jones discloses an anti refection coated glass (Col. 9, lines 5-6). However, Jones does not teach the placement location of this material. Okumura on the other hand, discloses several locations for various elements including the diffusion layer as mentioned earlier. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the light diffuser placements disclosed by Okumura to the display device disclosed by Jones to enhance the brightness of the display.

6. Claims 16-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones and den Boer as applied to claims 15 and 19 above, and further in view of Okumura (U.S.Patent No. 6,008,871).

Jones does not teach the placement of the light diffusion layer at other locations. Okumura on the other hand, discloses several locations for the placement of the diffusion layer (107) including the substrates, polarizers, and other elements (col. 6, lines 56-65). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the light diffuser placements disclosed by Okumura to the display device disclosed by Jones den Boer to enhance the brightness of the display in the transmissive mode and utilizing the light from the backlight assembly efficiently without damaging the brightness of the display in the reflective mode.

Allowable Subject Matter

7. Claims 3 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is an examiner's statement of reasons for allowance:

Prior art does not teach or suggest that (a) the second substrate of the liquid crystal device includes the light diffusion layer in the reflection region alone and (b) the thickness of the liquid crystal layer in the reflection region is about ½ of a thickness of the liquid crystal layer in the transmission region.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

PRA

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June 9, 2003

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800